

6.4 Redox

Name: _____ Class: _____ Date: _____

Total: 8 marks

KEY WORDS oxidation 氧化 • electrons 电子 • reducing agent 还原剂 • oxidising agent 氧化剂
• reduction 还原

Objective

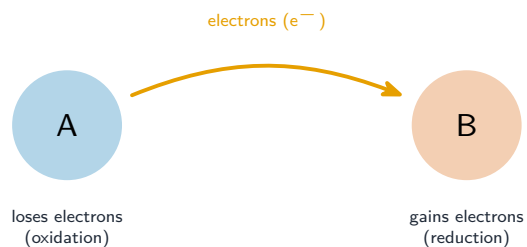
Build the skills to answer exam questions on **redox** 氧化还原 — oxidation and reduction in terms of oxygen and **electrons** 电子, **oxidising/reducing agents** 氧化剂/还原剂, and colour tests.

You must be able to:

- define oxidation and reduction (oxygen, electrons — OIL RIG)
- identify the oxidising agent and the reducing agent
- use the colour changes of manganate(VII) and iodide

1 Worked examples

■ Electron transfer



OIL RIG: Oxidation Is Loss, Reduction Is Gain (of electrons) — they always happen together

- **oxidation:** loss of electrons (or gain of oxygen); **reduction:** gain of electrons (or loss of oxygen).
- **oxidising agent:** is itself reduced; **reducing agent:** is itself oxidised.
- acidified manganate(VII) (purple) → colourless when it acts as an oxidising agent.

2 Practice

2.1 Define oxidation in terms of electrons.

[1]

2.2 State the colour change of acidified potassium manganate(VII) when it is reduced.

[1]

3 Exam-style questions

3.1 In the reaction $\text{Zn} + \text{Cu}^{2+} \rightarrow \text{Zn}^{2+} + \text{Cu}$, the zinc is:

[1]

A	B
C	D

A reduced (gains electrons)

B oxidised (loses electrons)

C the oxidising agent

D unchanged

3.2 Consider $\text{Mg} + \text{CuO} \rightarrow \text{MgO} + \text{Cu}$.

(a) State which substance is oxidised and which is reduced (using oxygen).

[2]

(b) Name the reducing agent.

[1]

3.3 Explain why oxidation and reduction must always happen together in a redox reaction.

[2]